



I-81 Corridor in Pennsylvania

Presented at the
I-81 Corridor Multi-State Meeting
Roanoke, Virginia
September 23, 2004

Walt Panko, PennDOT

Interstate Highway System in Pennsylvania



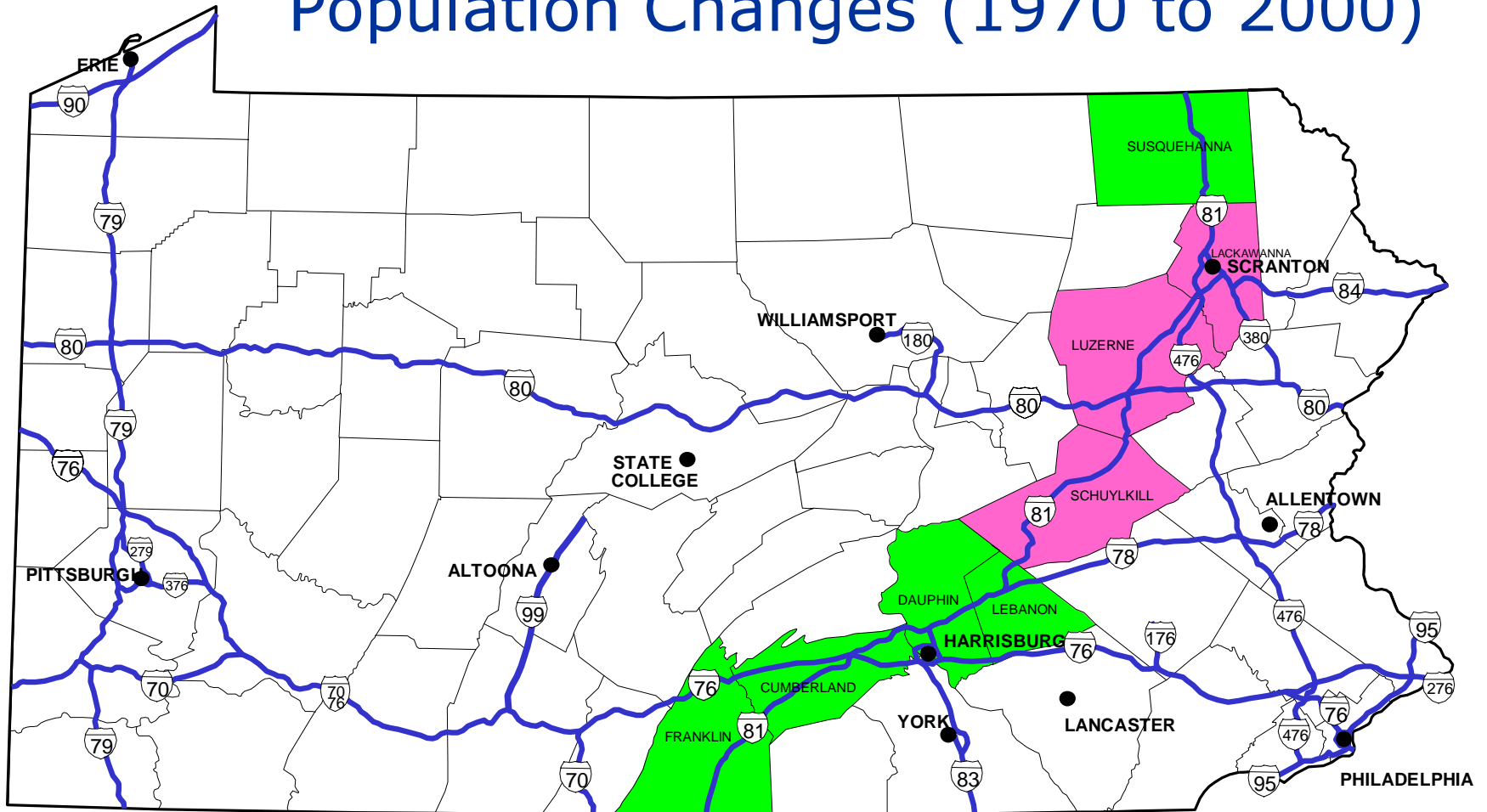


I-81 Corridor in Pennsylvania





I-81 Corridor in Pennsylvania - Population Changes (1970 to 2000)



Population Increases



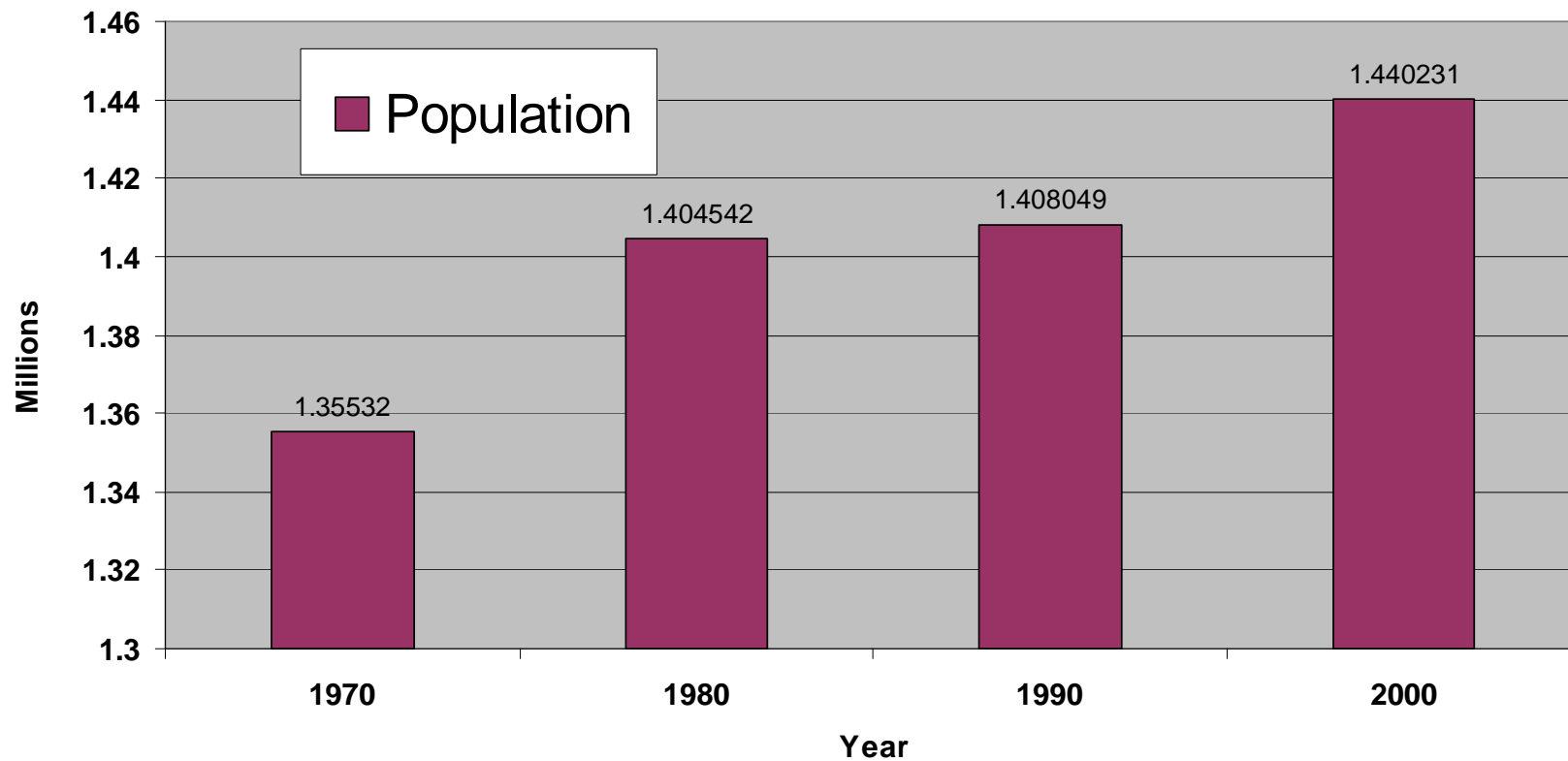
Population Decreases





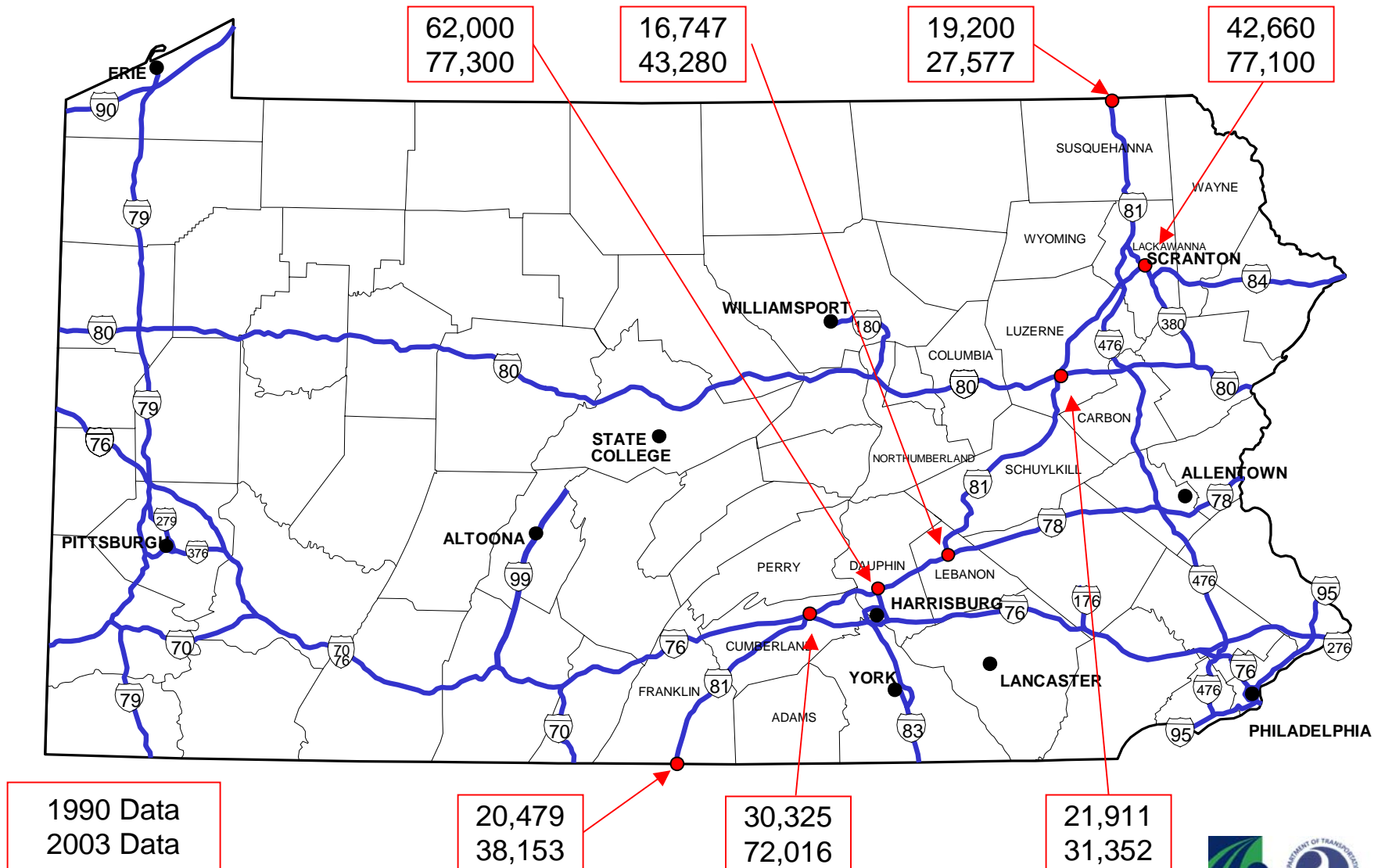
Total Population Along I-81

Total Population by Decade



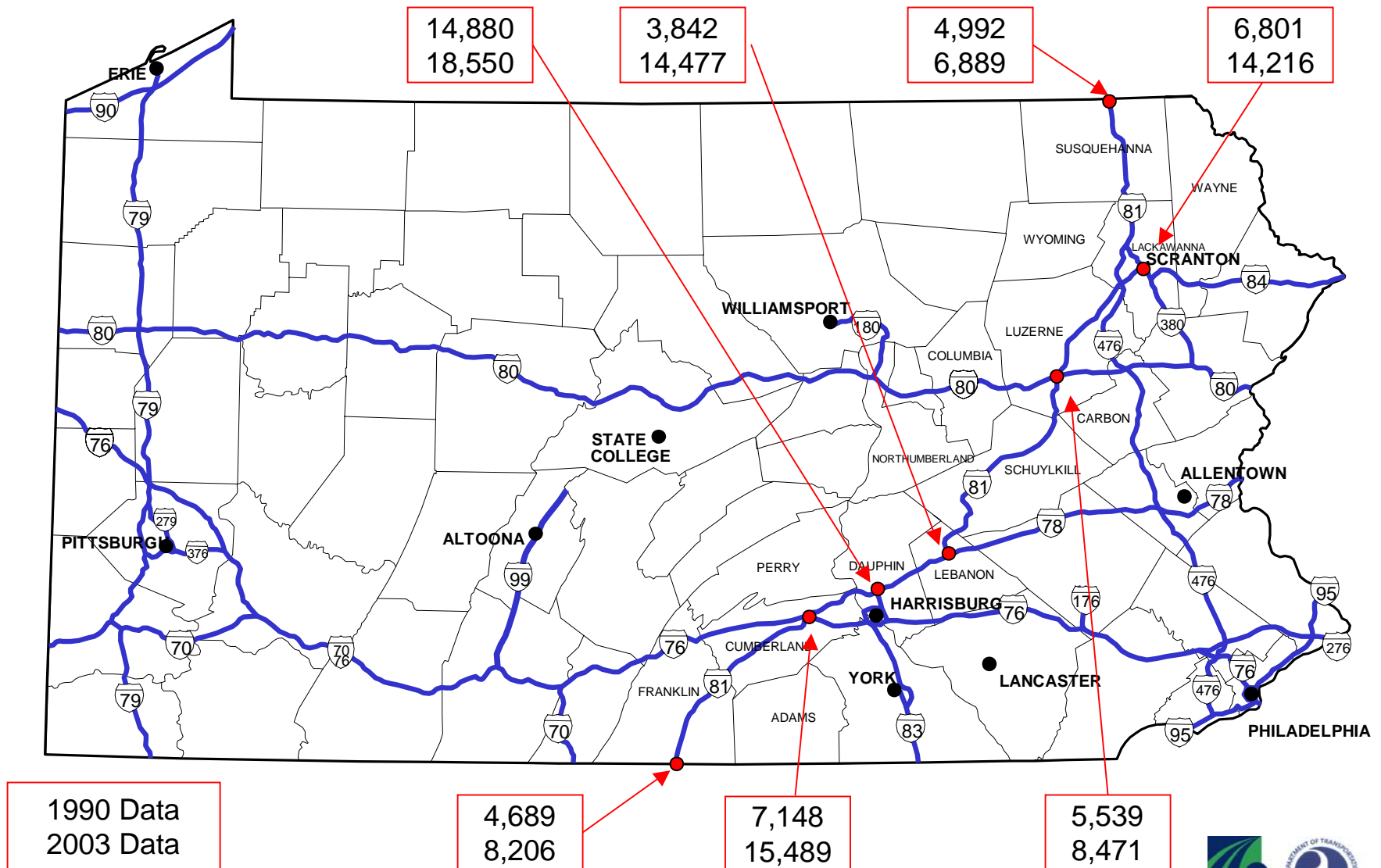


Average Daily Traffic



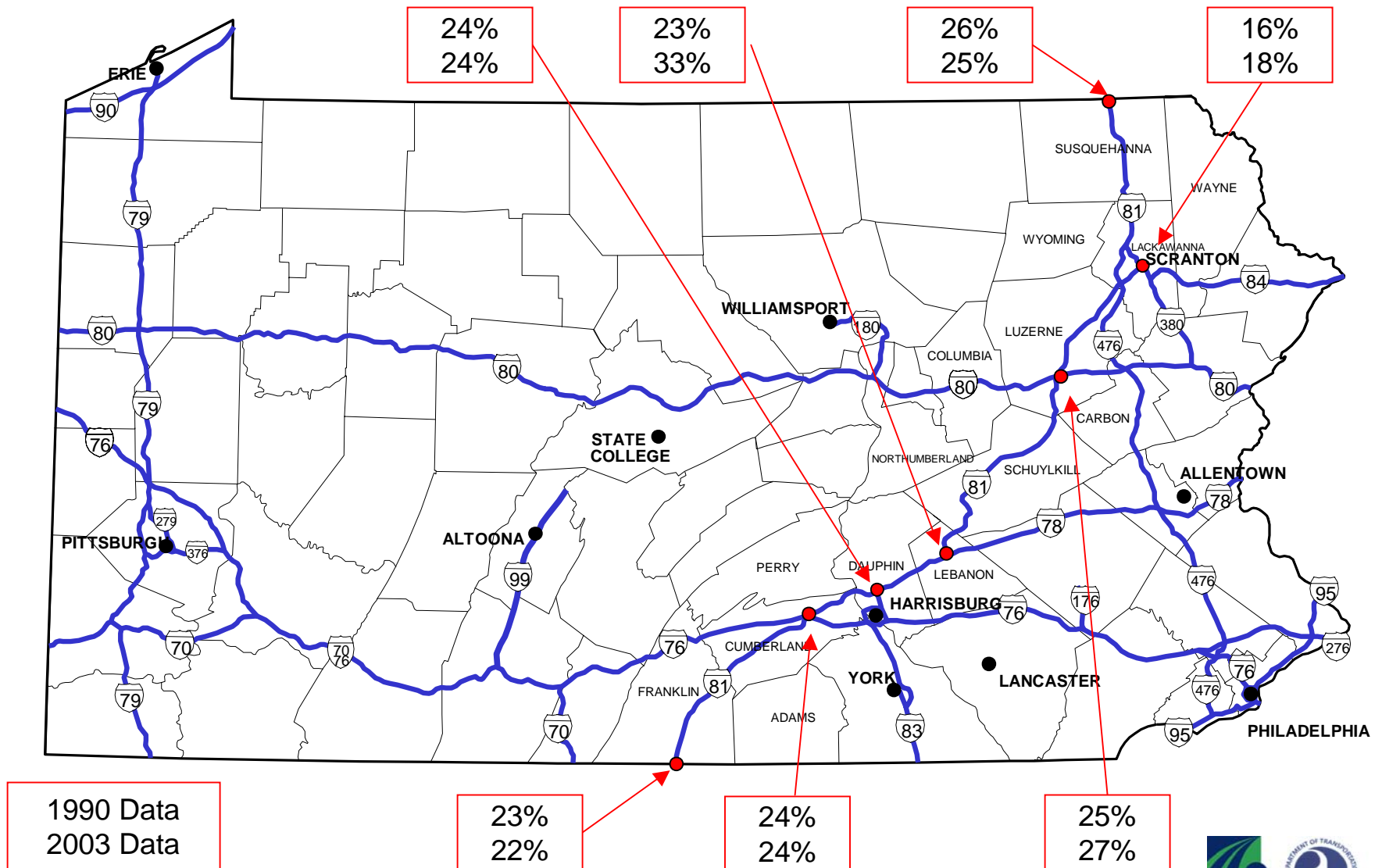


Average Daily Truck Traffic



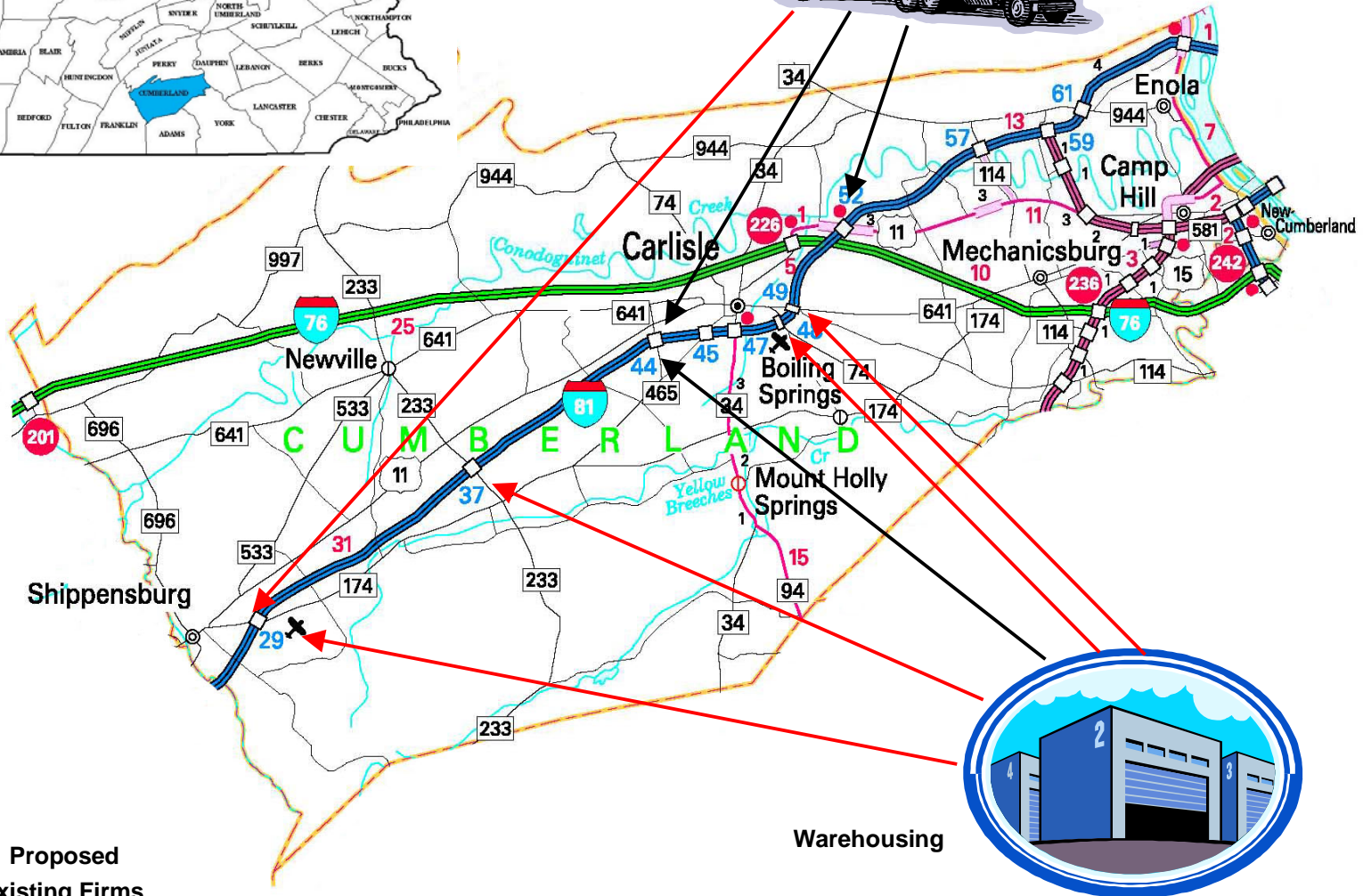


Percentage of Trucks



Truck

Trucking Firms



Warehousing

Proposed	Existing Firms
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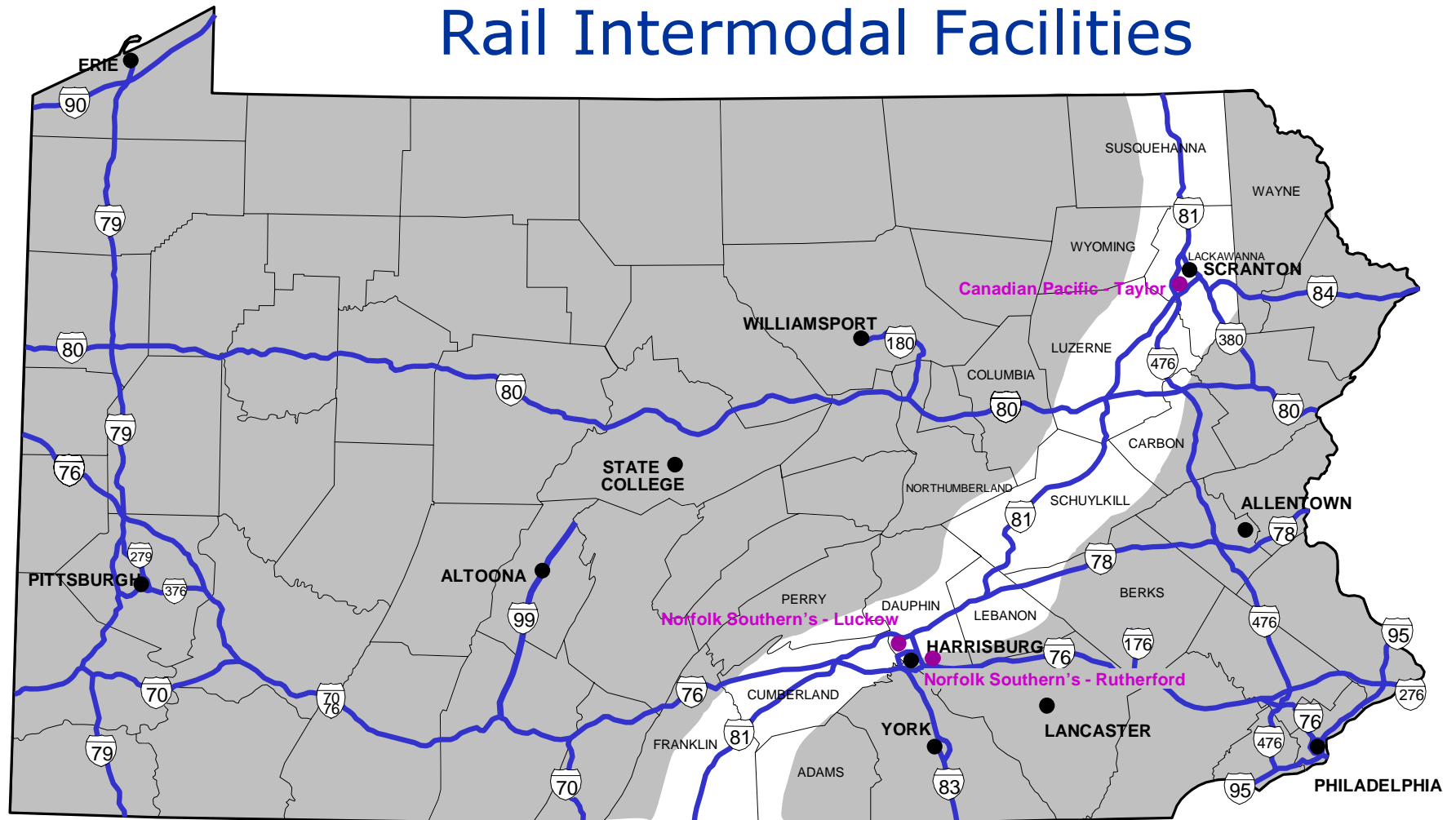


I-81 Corridor in Pennsylvania Military Facilities





I-81 Corridor in Pennsylvania Rail Intermodal Facilities





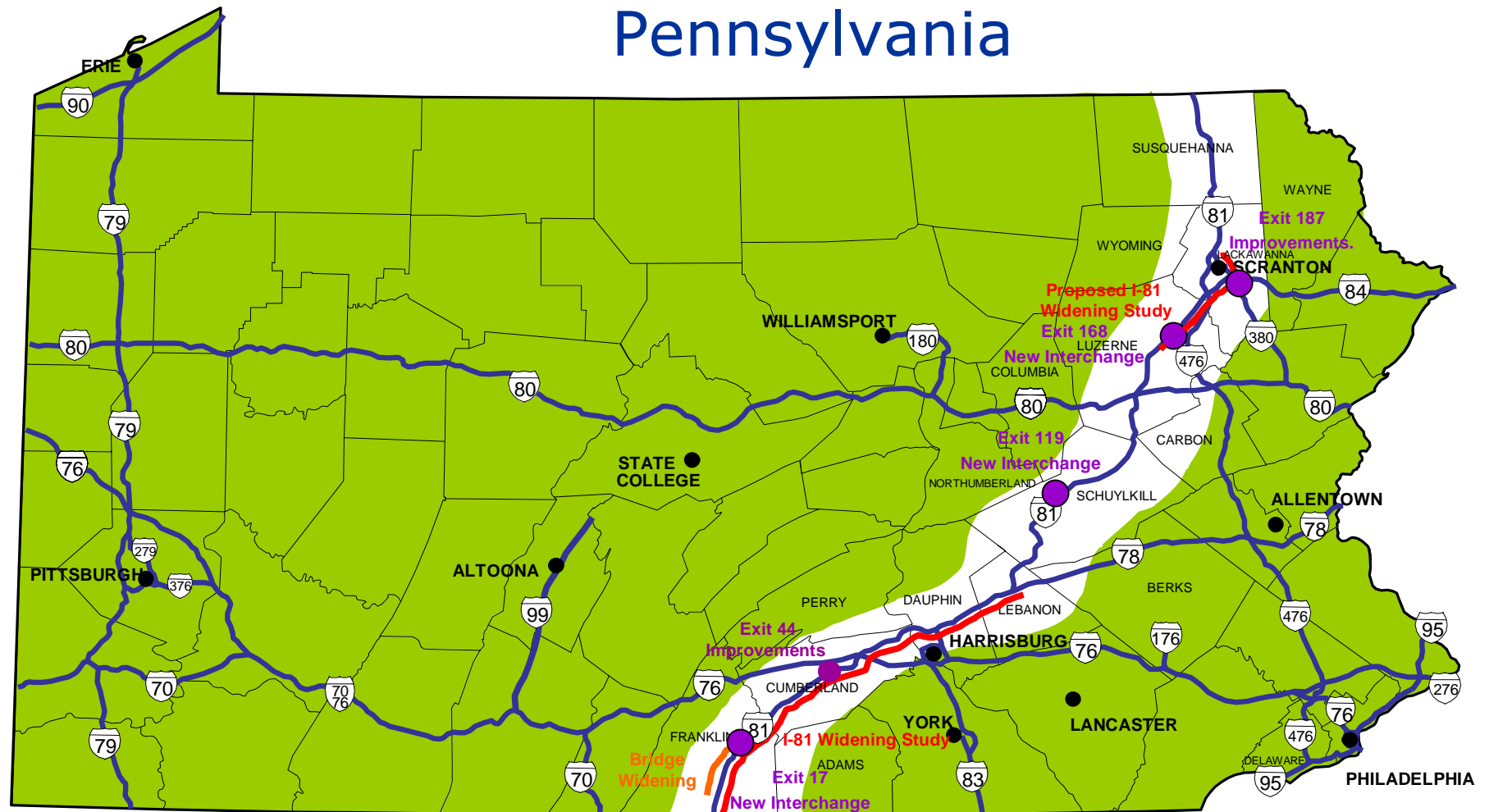
I-81 Corridor in Pennsylvania Combined Military & Rail Facilities



- Military Facilities
- Intermodal Facilities



Future of I-81 Corridor in Pennsylvania



Widening Study

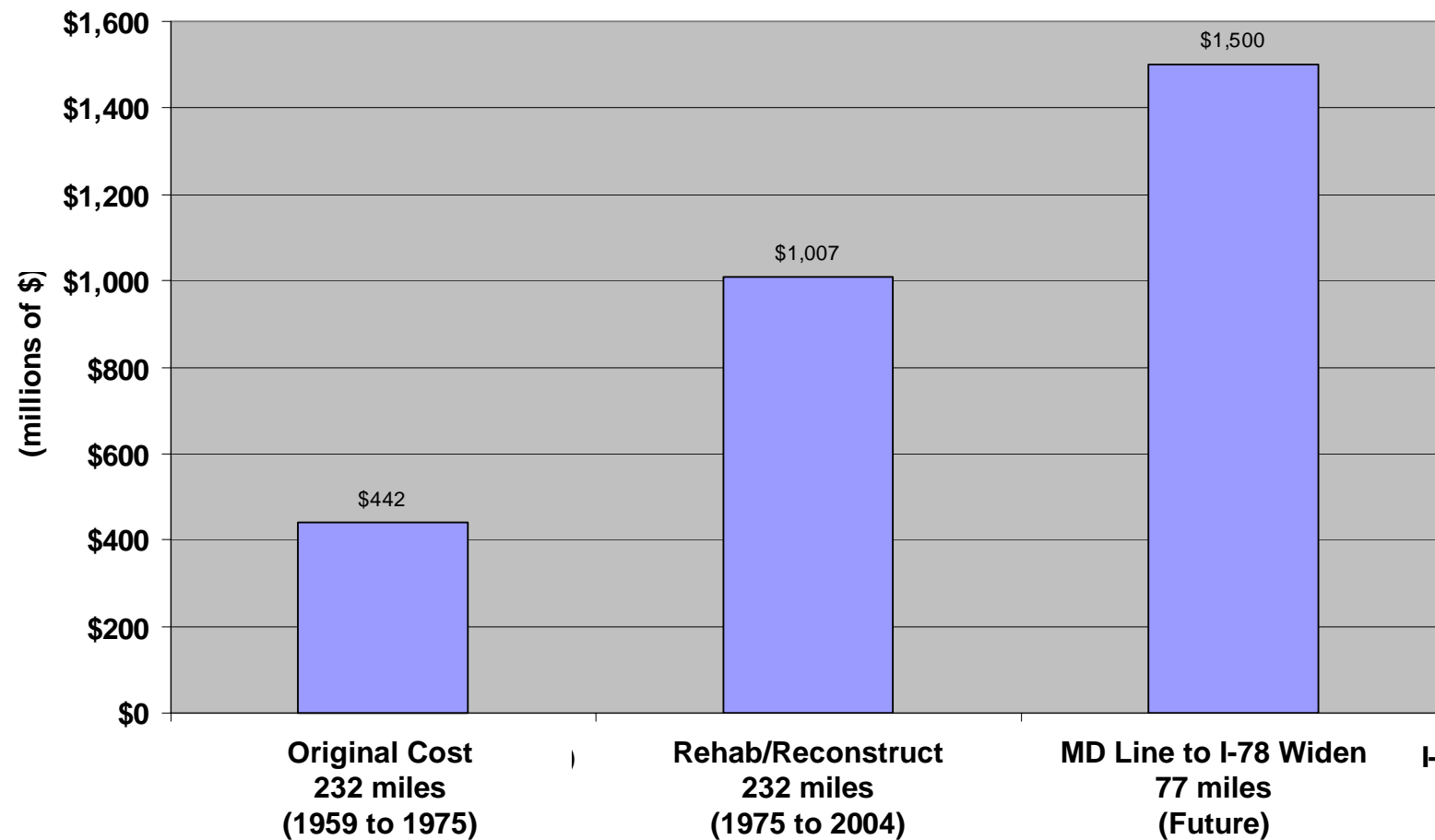
Bridge Widening

Interchanges





I-81 Corridor in Pennsylvania Construction Costs





I-81 Corridor in Pennsylvania

If you have any questions or comments,
please address them to:

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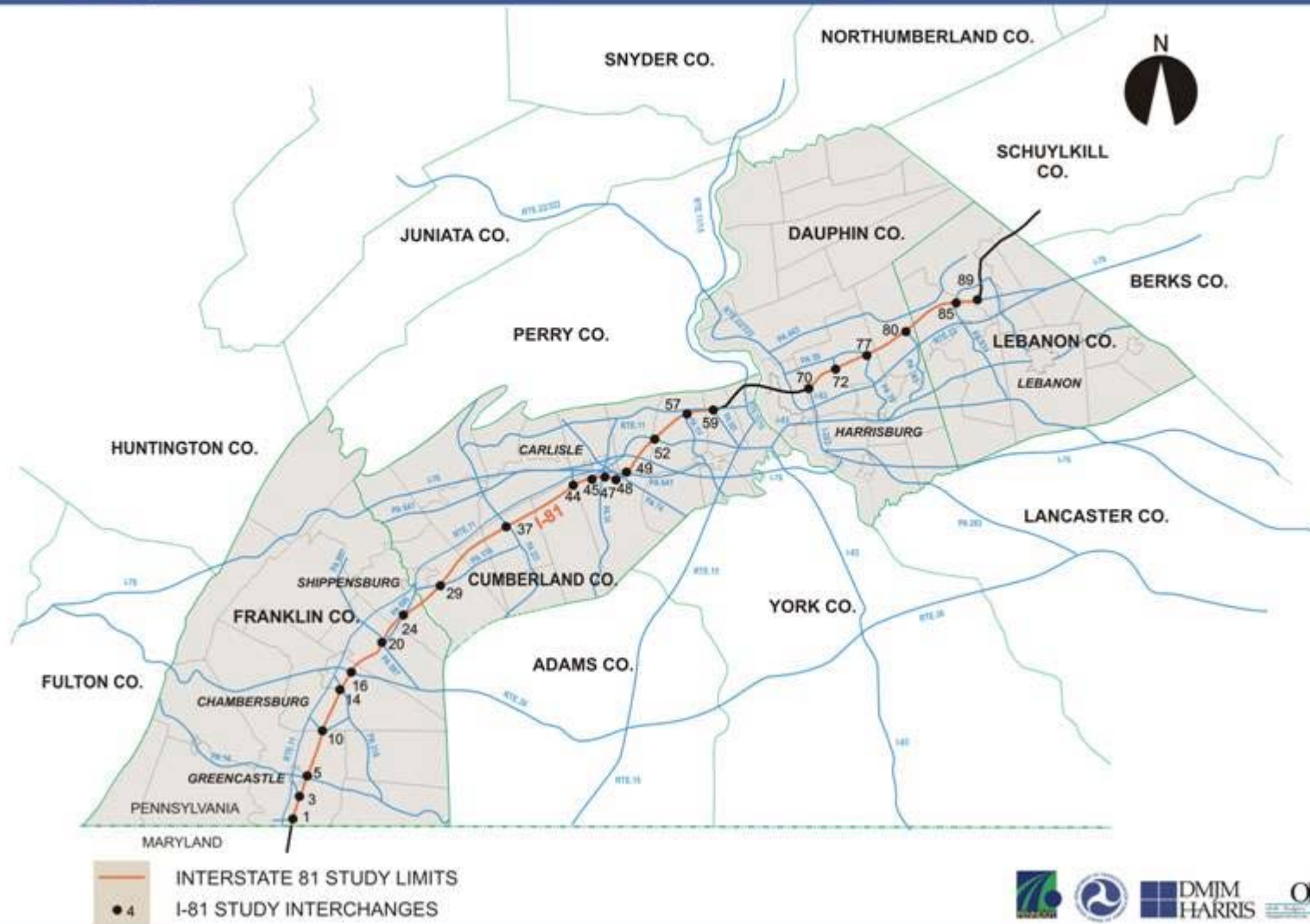
The I-81 Widening Study

Project Objectives and Study Area

Project Objectives

- Determine Existing and Future Conditions
e.g., Traffic / Land Use / Population / Employment
- Identify Corridor Needs
- Screen Potential Concepts
- Develop and Refine Improvement Concepts,
i.e., Transportation Solutions
- Identify Conceptual Projects

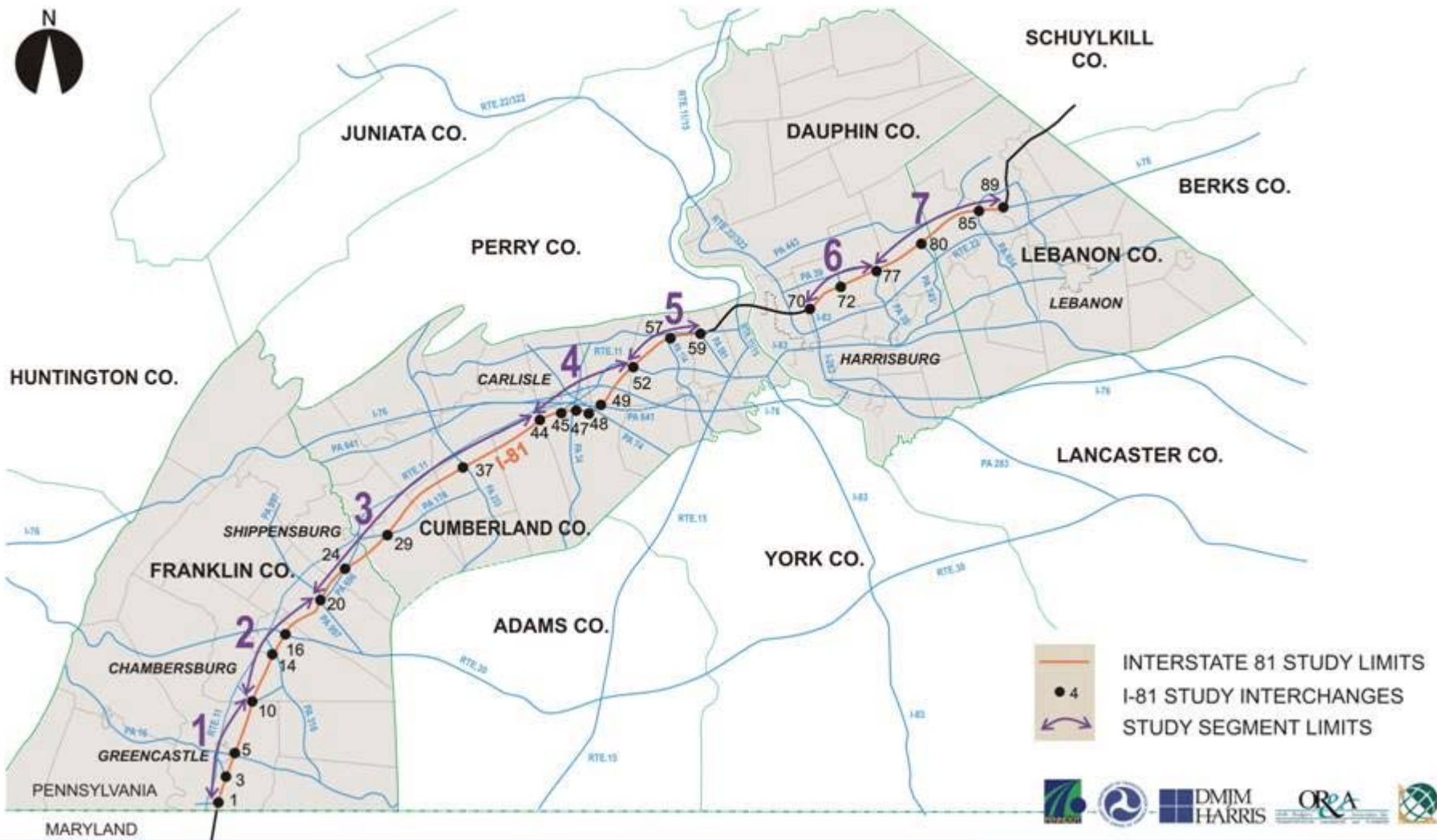
Study Area Map



Corridor Segments

- Divide 77+ Mile Corridor into Manageable Sections
- Seven Segments Based on:
 - Roadway Characteristics
 - Population Centers
 - Length (~ 10 miles)
- Mainline Evaluation Only – No Interchanges

Segment Plan Map



Corridor Conditions and Needs

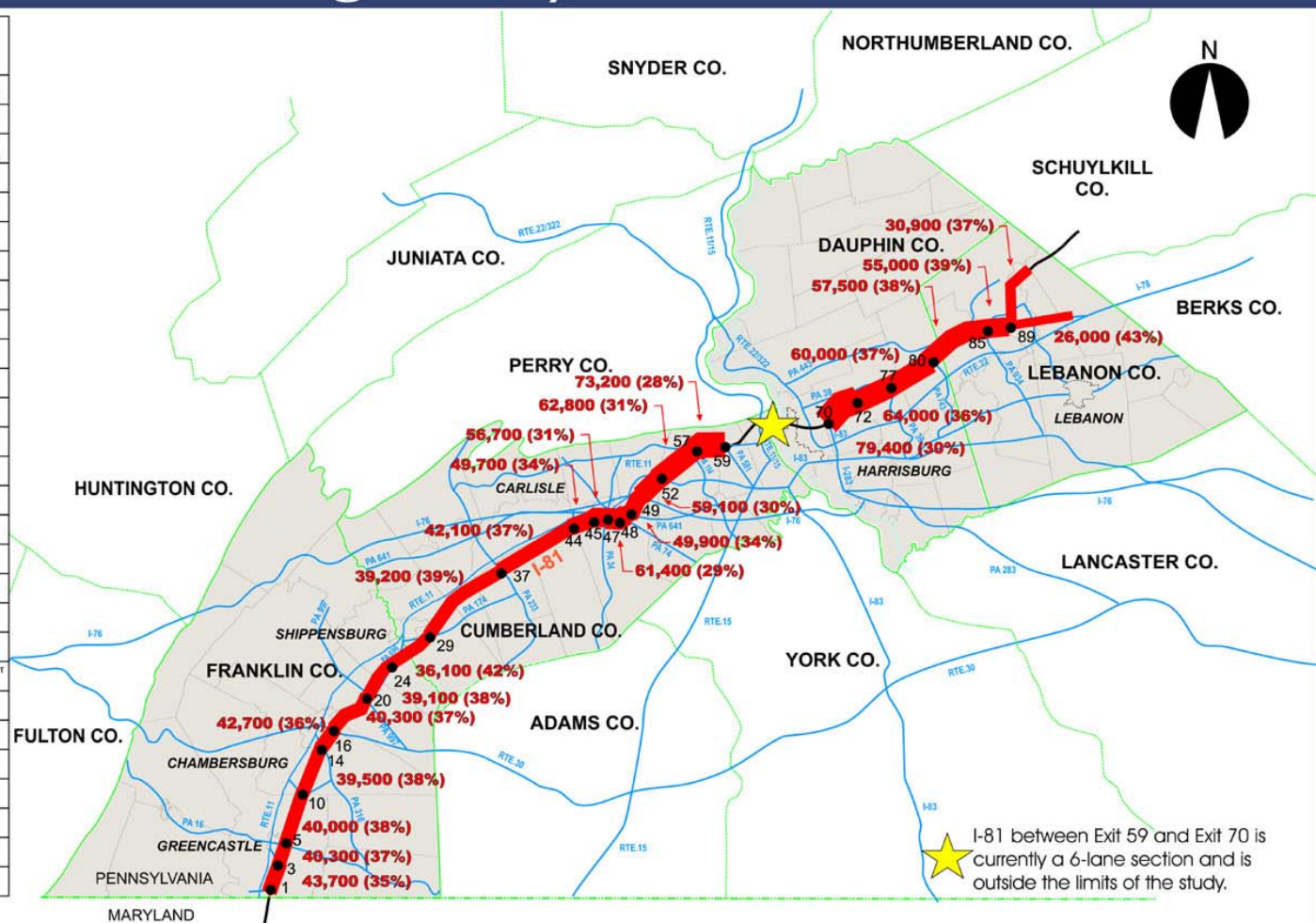
Corridor Conditions

- Collect Existing Traffic Volumes
- Forecast Future Traffic Volumes
- Determine Levels of Service
- Assess Crash Data
- Identify Roadway Deficiencies



2002 Existing Average Daily Traffic Volumes

Old Exit #	New Mileage Based Exit #	Exit Name	Intersecting Route #	County	Municipality
1	1	State Line	PA 163	Franklin (PA) / Washington (MD)	Antrim (PA) / Maugansville (MD)
2	3	Molly Pitcher Hwy.	US 11	Franklin	Antrim
3	5	Greencastle / Waynesboro	PA 16	Franklin	Greencastle / Antrim
4	10	Marion	PA 914	Franklin	Guilford
5	14	Wayne Ave.	PA 316	Franklin	Chambersburg / Guilford
6	16	Chambersburg / Gettysburg	US 30	Franklin	Chambersburg / Guilford
8	20	Scotland	PA 997	Franklin	Greene
9	24	Fayette Street	PA 696	Franklin	Southampton
10	29	King Street	PA 174	Cumberland	Shippensburg / Southampton
11	37	Newville	PA 233	Cumberland	Penn
12	44	Plainfield	PA 465	Cumberland	South Middleton
13	45	College Street	SR 3023	Cumberland	Carlisle / South Middleton
14	47	Hanover Street (NB)	PA 34	Cumberland	Carlisle
14E / 14W	47A / 47B	Hanover Street (SB)	PA 34	Cumberland	Carlisle
15	48	York Street (to/from the South)	PA 74	Cumberland	South Middleton
16	49	High Street (to/from the North)	PA 641	Cumberland	North Middleton / South Middleton
17	52	New Kingstown / Middlesex (SB)	US 11	Cumberland	Middlesex
17A / 17B	52A / 52B	New Kingstown / Middlesex (NB)	US 11 N / US 11 S	Cumberland	Middlesex
18	57	Mechanicsburg	PA 114	Cumberland	Silver Spring
19	59	Camp Hill	PA 581	Cumberland	Hampden
none	70	York	JCT I-83	Dauphin	Susquehanna / Lower Paxton
26	72	Paxtonia / Linglestown (SB)	SR 3019	Dauphin	Lower Paxton
26A / 26B	72A / 72B	Paxtonia / Linglestown (NB)	SR 3019	Dauphin	Lower Paxton
27	77	Manada Hill / Hershey	PA 39	Dauphin	West Hanover
28	80	Grantville / Hershey	To PA 743	Dauphin	East Hanover
29	85	Annville / Ft. Indiantown Gap (SB)	PA 934	Lebanon	East Hanover
29A / 29B	85A / 85B	Annville / Ft. Indiantown Gap (NB)	PA 934	Lebanon	East Hanover
none	89	Allentown	JCT I-78	Lebanon	Swatara

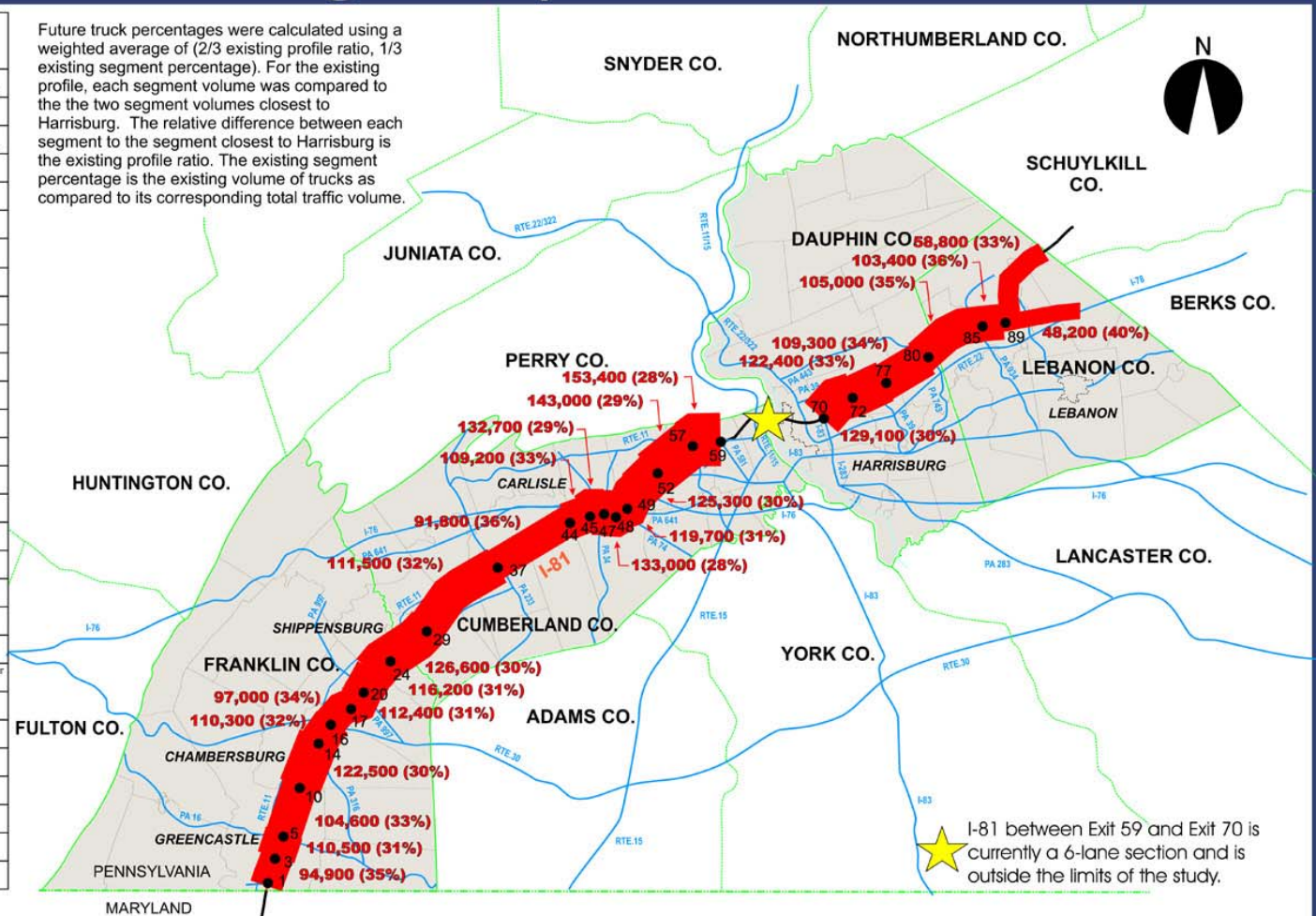




2030 No Build Average Daily Traffic Volumes

Old Exit #	New Mileage Based Exit #	Exit Name	Intersecting Route #	County	Municipality
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2	3	Molly Pitcher Hwy.	US 11	Franklin	Antrim
3	5	Greencastle / Waynesboro	PA 16	Franklin	Greencastle / Antrim
4	10	Marion	PA 914	Franklin	Guilford
5	14	Wayne Ave.	PA 316	Franklin	Chambersburg / Guilford
6	16	Chambersburg / Gettysburg	US 30	Franklin	Chambersburg / Guilford
7	17	Walker Road	Local	Franklin	Greene
8	20	Scotland	PA 997	Franklin	Greene
9	24	Fayette Street	PA 696	Franklin	Southampton
10	29	King Street	PA 174	Cumberland	Shippensburg / Southampton
11	37	Newville	PA 233	Cumberland	Penn
12	44	Plainfield	PA 465	Cumberland	South Middleton
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none	89	Allentown	JCT I-78	Lebanon	Swatara

Future truck percentages were calculated using a weighted average of (2/3 existing profile ratio, 1/3 existing segment percentage). For the existing profile, each segment volume was compared to the two segment volumes closest to Harrisburg. The relative difference between each segment to the segment closest to Harrisburg is the existing profile ratio. The existing segment percentage is the existing volume of trucks as compared to its corresponding total traffic volume.



AVERAGE ANNUAL DAILY TRAFFIC (AADT) VOLUMES
(THICKNESS CORRESPONDS TO ADT)

43,700 (35%) AADT VOLUME (TRUCK PERCENTAGE)
4 I-81 STUDY INTERCHANGES



Corridor Needs

- Reduce Traffic Congestion / Increase Capacity
- Eliminate Roadway / Ramp Deficiencies
- Improve Safety / Reduce Crashes

Traffic Levels of Service

Traffic Levels of Service

- Existing Conditions: Nearly All Segments Operate at Acceptable LOS, i.e., Free Flow
- 2030 No Build: Nearly All Segments Operate at Unacceptable LOS, i.e., LOS E or F
- 2030 Build: Improved LOS with only a few Segments Failing.

Screening of Concepts, i.e., Transportation Solutions:

Roadway Upgrades

Only the addition of a travel lane in each direction will meet the need to increase capacity, improve the level of service, reduce congestion and improve safety.

Nevertheless, the following transportation concepts reduce congestion and improve safety, and many are already being implemented or pursued in the region:

- **ITS with Incident Management**
- **Transit**
- **Transportation Demand Management**
- **Intermodal - Freight**
- **Growth Management**

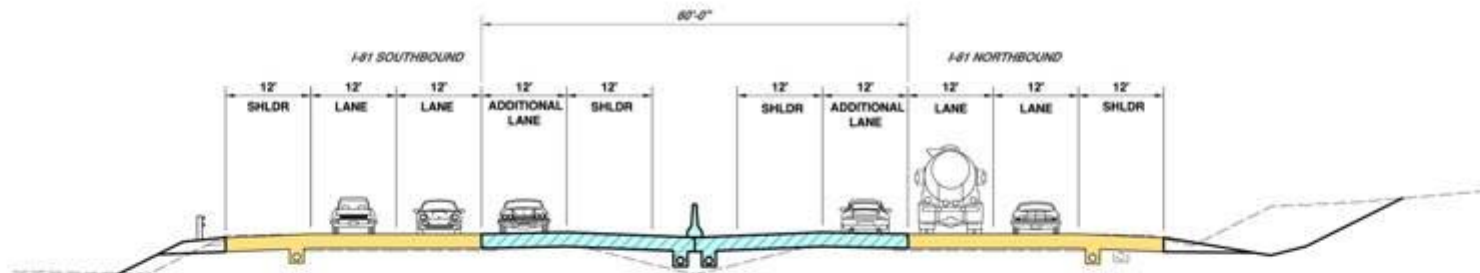
Detailed Evaluation – Roadway Upgrade Concept

Roadway Upgrade Concept - Methodology

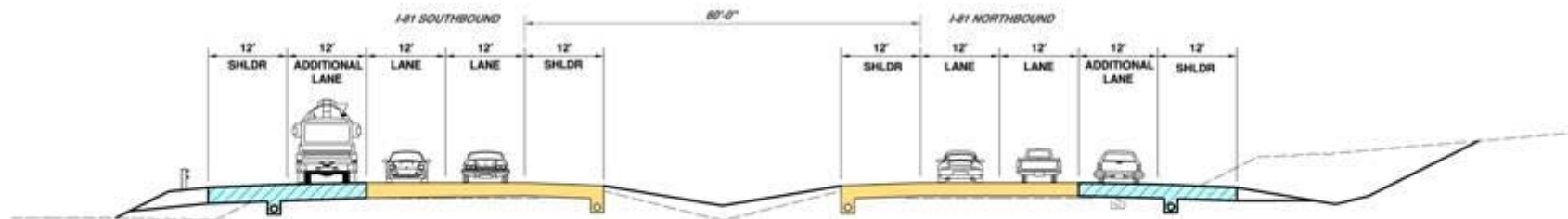
- Classify by Existing Median Widths 60' or 84'
- Consider Inside or Outside Widening
(from 2 to 3 lanes each way)
- Assess: Bridges; Right-of-Way; Utilities;
Construction Staging; and Cost
- Perform Segment by Segment Evaluation

Roadway Typical Sections

60' Existing Median



TYPICAL TANGENT SECTION
60' EXISTING MEDIAN
ADDITIONAL INSIDE LANE



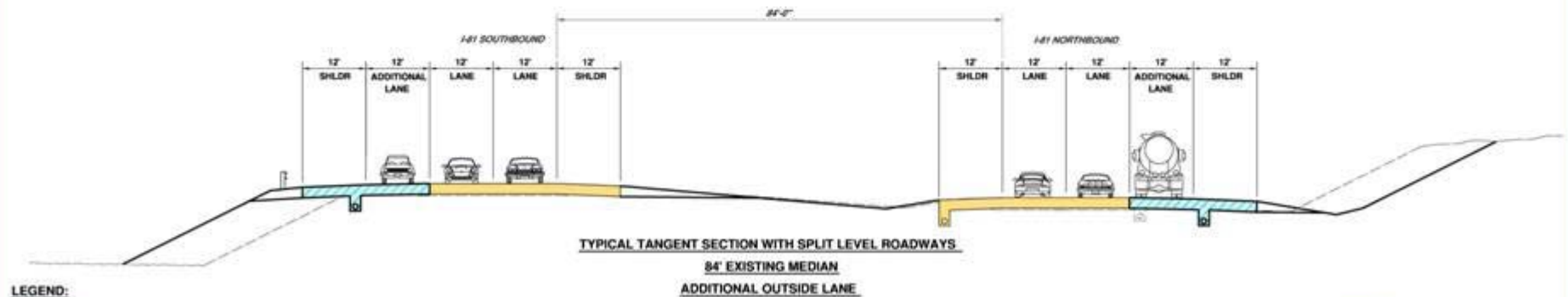
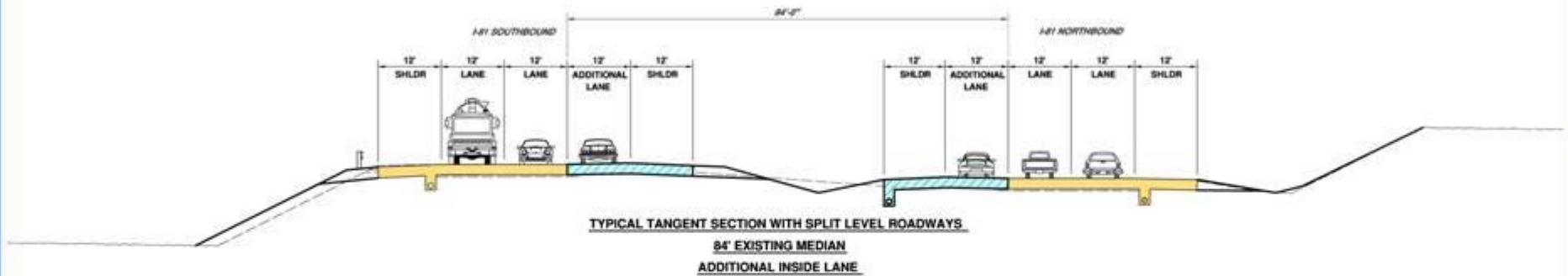
TYPICAL TANGENT SECTION
60' EXISTING MEDIAN
ADDITIONAL OUTSIDE LANE

LEGEND:

- EXISTING
- PROPOSED IMPROVEMENTS

Roadway Typical Sections

84' Existing Median



Roadway Upgrade Concept - Conclusions

- Inside or Outside Widening are both feasible
- Inside Widening \$17M / mile – \$23M / mile
- Outside Widening \$25M / mile - \$30M / mile
- Replace All Mainline Bridges and Overhead Bridges
- Lengthen On and Off Ramps

Segment Cost Summary Inside Widening

Segment 1 (Rural) at 10 miles	\$184M
Segment 2 (Rural) at 10 miles	\$190M
Segment 3 (Rural) at 24 miles	\$460M
Segment 4 (Urban) at 8 miles	\$224M
Segment 5 (Rural) at 7.5 miles	\$137M
Segment 6 (Urban) at 7 miles	\$156M
Segment 7 (Rural) at 12 miles	<u>\$229M</u>
Total	\$1.58B

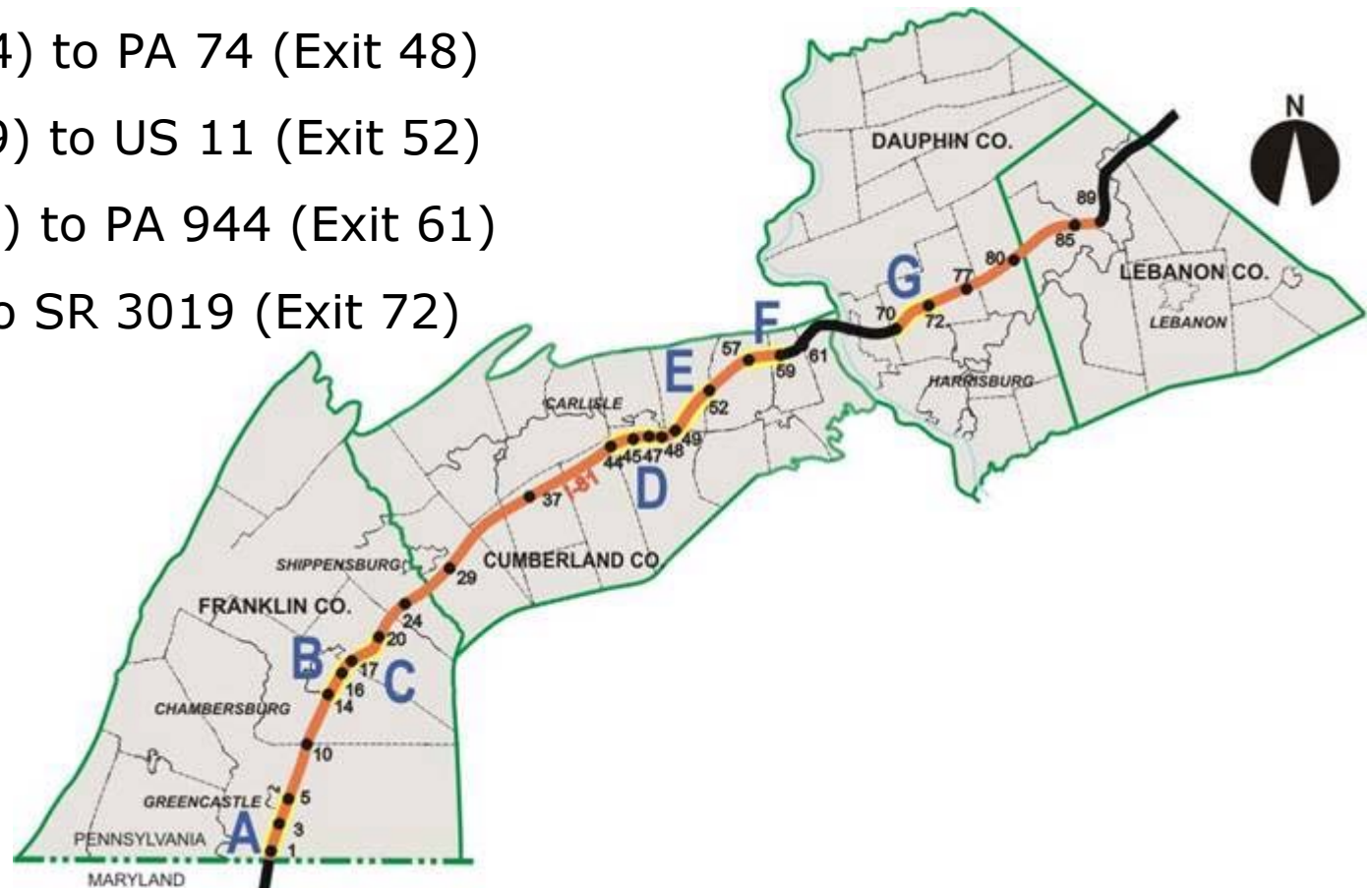
Conceptual Projects

Conceptual Projects

- Funding Constraints Exist along the Corridor
- Individual Segments are Based on Long Term Needs
- Conceptual Projects Address Short Term Needs within an Overall Segment
- Conceptual Projects Satisfy Both Short Term and Long Term Needs and Serve as a Template for the Corridor Long Widening Scheme

Index Map of Conceptual Projects

- A** Maryland State Line / PA 163 (Exit 1) to PA 16 (Exit 5)
- B** PA 316 (Exit 14) to SR 1010 (Future Exit 17)
- C** SR 1010 (Future Exit 17) to PA 997 (Exit 20)
- D** PA 465 (Exit 44) to PA 74 (Exit 48)
- E** PA 641 (Exit 49) to US 11 (Exit 52)
- F** PA 114 (Exit 57) to PA 944 (Exit 61)
- G** I-83 (Exit 70) to SR 3019 (Exit 72)



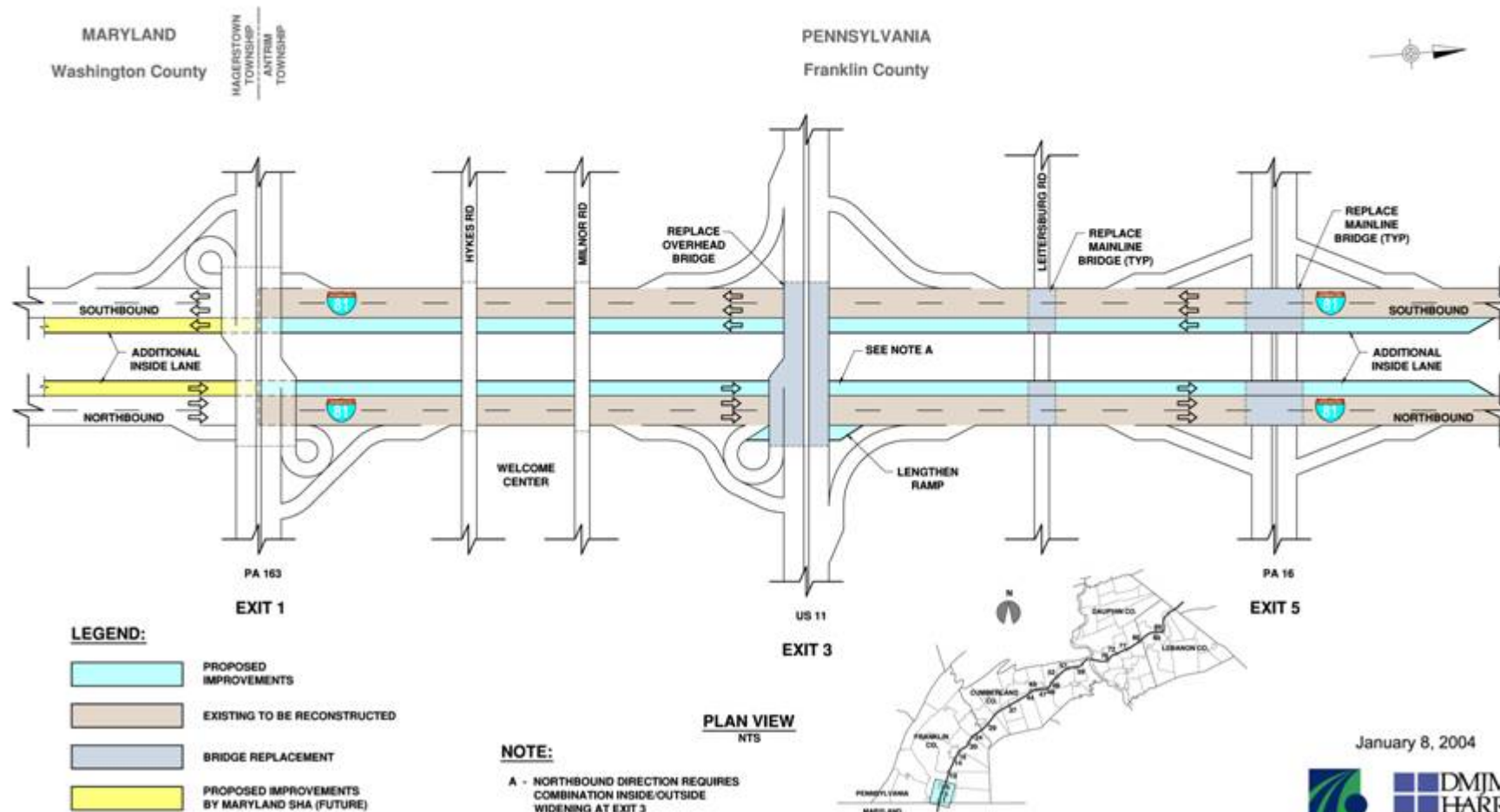
Conceptual Projects

- Provide Additional Inside Lanes
- Reconstruct Mainline Pavement
- Lengthen Ramps to Current Standards
- Connect Ramps at Closely Spaced Interchanges
- Serve as Template for Future Segment Projects

Conceptual Roadway Plan PA 163 (Exit 1) to PA 16 (Exit 5)

A

(APPROXIMATE LENGTH: 6 MILES)

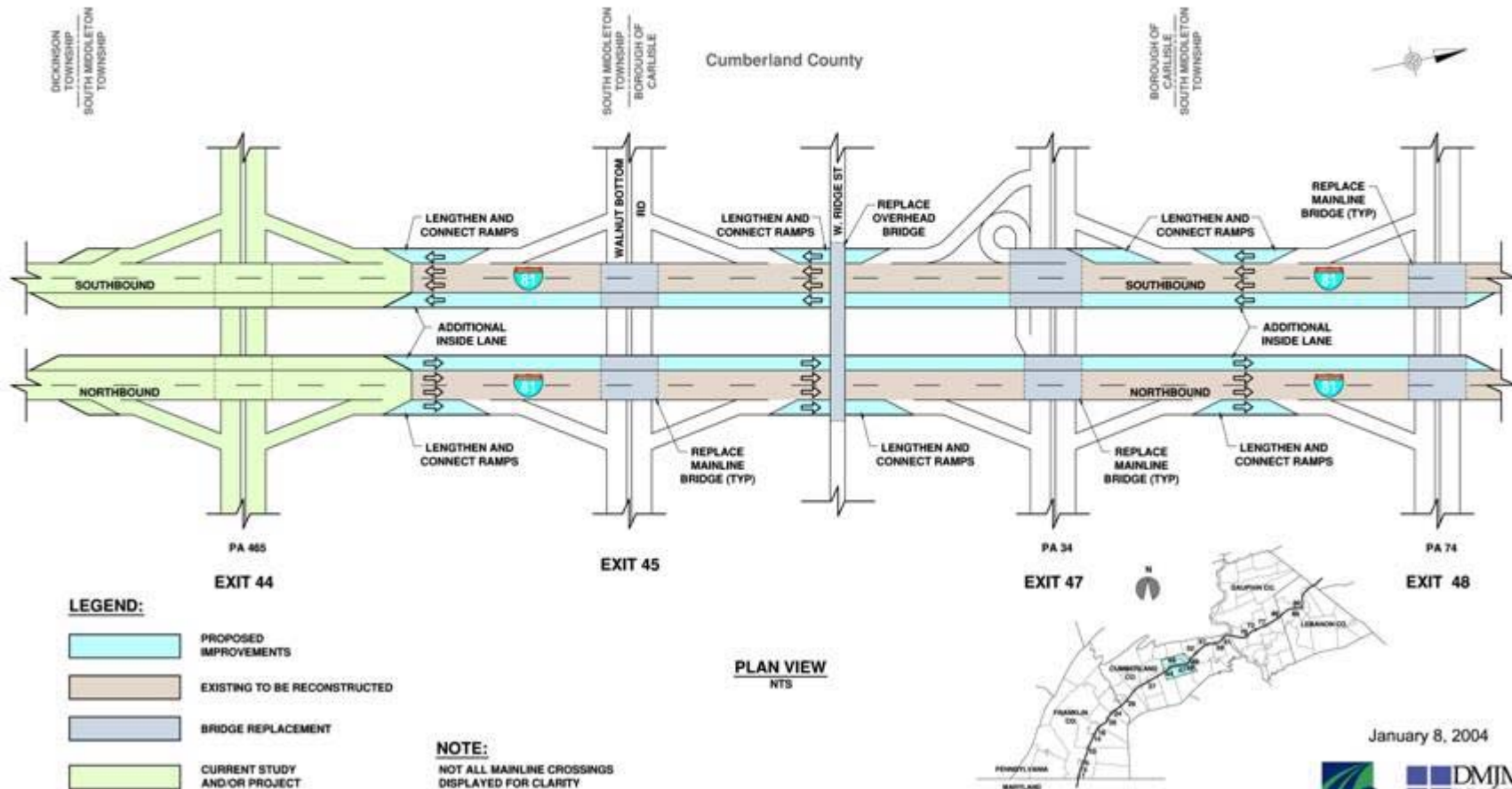


Conceptual Roadway Plan

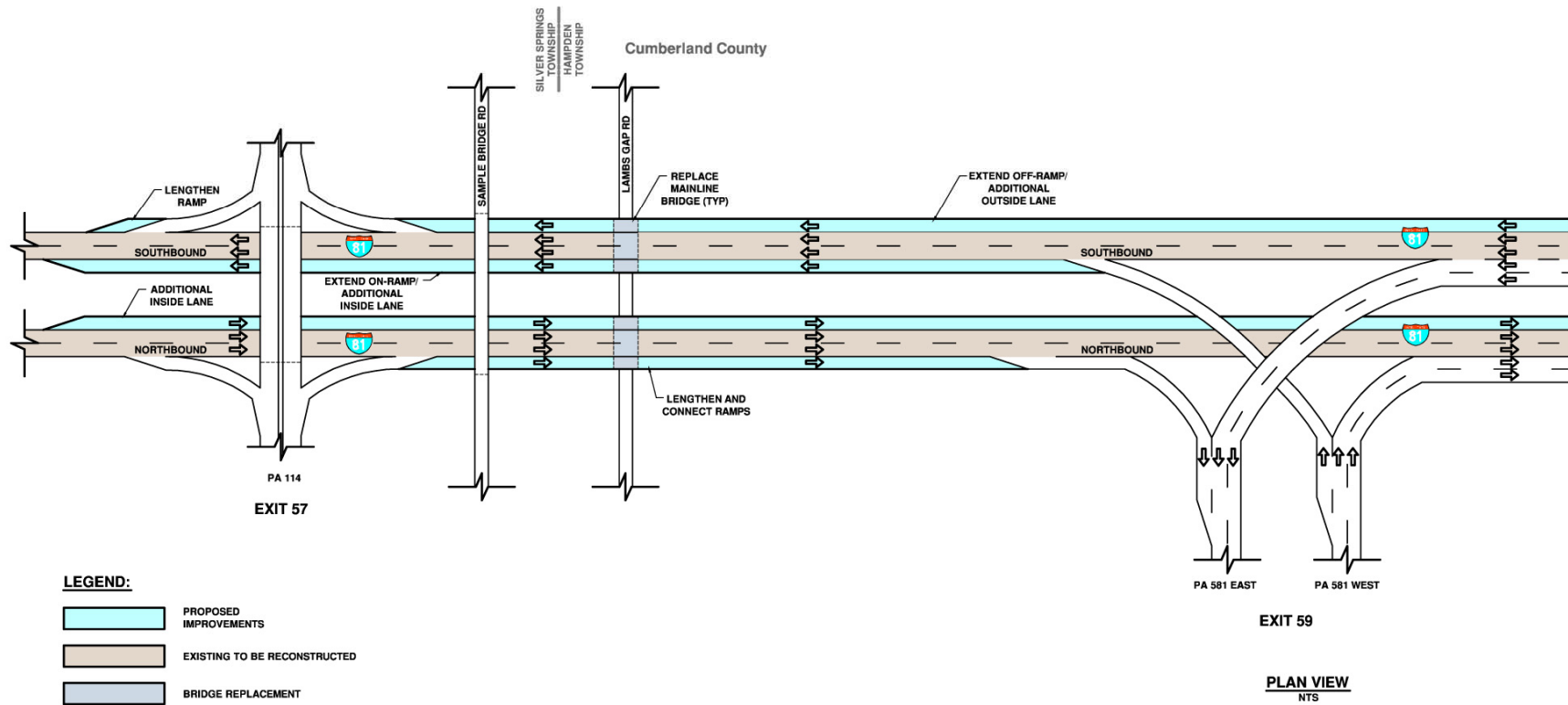
PA 465 (Exit 44) to PA 74 (Exit 48)

D

(APPROXIMATE LENGTH: 4 MILES)



(APPROXIMATE LENGTH: 4.5 MILES)



Conceptual Projects Cost Summary

A (PA 163 (Exit 1) to PA 16 (Exit 5))	\$100M
B (PA 316 (Exit 14) to SR 1010 (Future Exit 17))	\$76M
C (SR 1010 (Future Exit 17) to PA 997 (Exit 20))	\$51M
D (PA 465 (Exit 44) to PA 74 (Exit 48))	\$110M
E (PA 641 (Exit 49) to US 11 (Exit 52))	\$73M
F (PA 114 (Exit 57) to PA 944 (Exit 61))	\$84M
G (I-83 (Exit 70) to SR 3019 (Exit 72))	<u>\$39M</u>
Total	\$533M

I-81 Widening Study

If you have any questions or comments,
please address them to:

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